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Washington, D. C

Attention: Mr.

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Subject: Progress Reports,
Submission of

Enclosure: (A) Progress Reports for the Month of November 1958,
in quintuplicate

Gentlemen:

As required, Enclosure (A), described above, is submitted detailing the progress achieved during the month of November 1958.

In the event further information is desired concerning the enclosed reports, do not hesitate to contact the writer.

Very truly yours,

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Contract Administrator
NKG:js

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TRANSPORTABLE INFLATABLE ANTENNA

Purpose: The scope of this project is to design, develop and test one antenna system for the 350-10,000 mc range and to fabricate and deliver five complete antenna systems with indoor mounts and two interchangeable outdoor mounts.

Personnel: Electrical Engineer:
Mechanical Engineer:

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Status: All previous measurements have been made using models with an α angle of 75° . In order to determine whether or not this was the best α angle to use, sheet, trapezoidal tooth structures having α angles of 90, 82.5, 75, 67.5, 60, 52.5 and 45° were constructed and tested as to location of phase center, E and H plane patterns, and impedance and VSWR over a half period. From this data it appears that a structure having an α angle of 60° was the most desirable. As stated in last month's report the sheet type structures have better characteristics as to the stability of the location of the phase center over a period of frequencies.

From above observations and other considerations the structure to be used for the primary feed will be of the sheet, trapezoidal tooth type with the following parameters:

$$\alpha = 60^\circ, \tau = .707, \beta = 10^\circ \text{ and } \psi = 45^\circ.$$

The test set up for measuring the relative gain of the complete antenna as a function of the deviation of the phase center of the primary feed from the focal point of the

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reflector as mentioned in last month's report is nearing completion and should be functioning within a week.

A test model of the primary horn feed to be used with the 2 foot reflector has been designed and is in the process of being fabricated.

As to the mechanical considerations, the fabric for the inflatable reflectors has been ordered and the design of the supporting structure is at least 50% completed. The remainder of the design has been decided on and only minor details remain to be worked out.

At present, quotes are being obtained for the 2 piece, 2 foot spun aluminum dishes. They will be ordered in the near future.

Future Plans: The relative gain measurements will be made as soon as possible, also, the impedance of the structure in conjunction with the reflector will be measured at the same time. The horn feed will be tested as soon as it is completed.

The work will continue on the mechanical design.

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